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## Role of antioxidant enzyme expression in the selective cytotoxic response of glioma cells to gamma-linolenic acid supplementation.

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### Abstract

We hypothesized that the cytotoxic effect of GLA observed in glioma but not normal glial cells reflects differences in GLA metabolism and/or antioxidant enzyme levels between these cells. The PUFA content of unsupplemented glioma cells was approximately 50% of that seen in unsupplemented astrocytes. Supplementation with 20 microM GLA for 24 h led to a 230 and 22% increase in glioma and astrocyte PUFA content, respectively, such that both supplemented cell types contained similar levels of PUFA. No major differences were seen in terms of GLA metabolites retained in the cells or secreted into the media following incubation with [(3)H]-GLA. No significant differences were observed in activity of MnSOD or CuZn-SOD between the cells. However, CAT and GPx activity in the glioma cells was significantly higher and lower, respectively, than observed in normal astrocytes. GLA supplementation resulted in a significant increase in CAT activity in normal astrocytes; glioma CAT activity was unchanged. No significant change was seen in the other antioxidant enzymes following GLA supplementation. These results suggest that the cytotoxic effect of GLA on glioma cells reflects both increased PUFA content and an inability to upregulate CAT.

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